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CIRCULAR NUMBER 10

CHIEF SURGEON'S OFFICE

GHQ AFPAC

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1 September 1946

Articles for Publication in Circular

It is desired that the Monthly Circular Letter published by the Chief Surgeon, GHQ, AFPAC, be of maximum value to all of the Medical Department personnel in the field. To that end, articles of professional or administrative nature that might be of general interest are needed. All Medical Department officers as well as the Commanding Officers of Medical Department units and the Surgeons of the major commands are solicited for articles of administrative or technical value. Such articles should be forwarded so as to reach the Chief Surgeon, AFPAC, not later than the 20th of the month preceding the publication of the circular in which it is to appear.

BRIGADIER GENERAL BETHEA BECOMES CHIEF SURGEON

Announcement is made that Brigadier General James A. Bethea has been assigned as the Chief Surgeon, United States Army Forces, Pacific.

General Bethea was born in Marion, South Carolina, in 1887, attended Clemson College and received his M.D. degree from Tulane University in 1913. He joined the Army Medical Corps in 1916 and was graduated from the Army Medical School in 1917.

The new Chief Surgeon served through out World War I, and advanced from the rank of First Lieutenant to Major. He was in France with the Fourth Division and a member of the Army of Occupation in Germany.

Returning to the United States in 1919, his tour of duty took him to Walter Reed General Hospital, Washington, D. C., Letterman General Hospital, San Francisco, California, and several other posts throughout the United States. He also served in Panama and the Philippine Islands. A member of the American College of Surgeons and a diplomat of the American Board of Surgery, he is recognized as one of the Army's top surgeons.

General Bethea assumed command of McCloskey General Hospital, Temple, Texas, on June 15, 1942. Prior to that date he served as Chief of the Surgical Service at the Station Hospital Fort Sam Houston, Texas, later known as Brooke General Hospital.

The General's motto - "Happiness, kindness and efficiency" was adopted at McCloskey General Hospital at the very beginning and the installation became one of the best known amputation and neuro-surgical centers in the United States. General Bethea was awarded the Legion of Merit for exemplary work during his 42 months administration of the hospital.

McCloskey Hospital reached it's peak load in August 1945 when 5,560 patients were carried on the hospital roster. When McCloskey was declared surplus on 30 March 1946, General Bethea was assigned as Commanding General, Brooke General Hospital, Brooke Army Medical Center, the post he held until his appointment as Chief Surgeon, United States Army Forces, Pacific.

A firm advocate of sound medical and surgical practice, General Bethea supports the theory that a patient's comfort, welfare and happiness is essential to speedy recovery.



GENERAL HEADQUARTERS
UNITED STATES ARMY FORCES, PACIFIC

Chief Surgeon's Office

APO 500
22 August 1946

TO: All Personnel of the Medical Department, Army Forces,
Pacific.

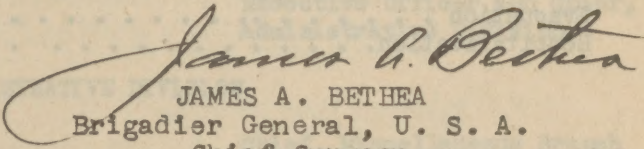
As Chief Surgeon, United States Army Forces, Pacific,
I extend my best wishes to all Medical Department personnel.

Your past record is one of a difficult mission accomplished in a highly commendatory manner. Your individual efforts have been in keeping with the highest traditions of the Medical Department.

According to current reports, the general health of the troops is excellent, and to all of you who have contributed so much to achieve this end my sincere thanks. However, we are entering the post-war transition period where even more difficulties will be encountered. Faced with the perplexing problems of acute shortages in trained Medical Department personnel, together with the War Department policy of rigid economy, it will be our job in the future to be even more vigilant.

To those of you who are especially fitted by past service and training in the requirements of a smooth-functioning organization, I shall look for guidance of those who are less experienced. With your wholehearted cooperation and continued fine performance of duty, we can and will maintain the highest standard of medical care in AFPAC.

Most sincerely,


JAMES A. BETHEA
Brigadier General, U. S. A.
Chief Surgeon

GENERAL HEADQUARTERS
UNITED STATES ARMY FORCES, PACIFIC
Chief Surgeon's Office

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GENERAL HEADQUARTERS
UNITED STATES ARMY FORCES, PACIFIC
Chief Surgeon's Office

CIRCULAR LETTER)
NO.10)

APO 500
1 September 1946

PART I

ADMINISTRATIVE

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A. GENERAL

I. Organization of Chief Surgeon's Office

1. The following is a list of commissioned personnel currently assigned to the Chief Surgeon's Office:

Brig. General James A. Bethea	Chief Surgeon
Colonel Howard F. Currie	Deputy Chief Surgeon
Major Frederick H. Gibbs	Executive Officer and Chief, Administrative Division

ADMINISTRATIVE DIVISION

Major Hillas B. Brockett	Chief, Miscellaneous Branch
Lt. T. J. Shelton	Chief, Operations Branch

PIANS AND OPERATIONS DIVISION

Colonel John C. Fitzpatrick	Director
Major John V. Painter	Chief, Supply Branch
CWO Harold Hendrix	Chief, Medical Records Branch

PERSONNEL DIVISION

Lt. Colonel Lewis C. Shellenberger
Major Sam A. Plemmons
Captain Joseph W. Jacobs

Director
Assistant Director
Chief, Analysis Branch

MEDICAL INSPECTORS DIVISION

Colonel Albert R. Dreisbach
Colonel Carl W. Tempel
Lt. Colonel Warner F. Bowers

Director
Medical Consultant
Surgical

MISCELLANEOUS

Colonel Terry P. Bull
Colonel Stanley C. Smock
Lt. Colonel Mary G. Phillips

Dental
Veterinary
Nursing

II. Limitation on Hospital Funds

2. The following letter, GHQ, AFPAC, dated 20 August 1946, file AG 123 (13 Aug 46) MD-PO, Subject: "Limitation on Hospital Funds," is quoted for your information and guidance, except that for all funds operating on garrison ration the provisions of Section III, WD Circular 289 dated 22 September 1945 will apply:

"1. Reference paragraph 9, Section III, AFPAC Regulations 50-50 dated 21 June 1946, Subject: "Hospital Funds," the following limitations on hospital funds are prescribed:

a. Maximum net working capital in major command Central Hospital Fund is \$4.00 per authorized T/O bed.

b. Maximum net working capital in hospital funds of installations is \$6.00 per authorized T/O bed.

"2. Funds in excess of the above prescribed maximum net working capital will be forwarded (in the form of a Treasurer of the United States check) to the Custodian, AFPAC Central Hospital Fund, Office of the Chief Surgeon, General Headquarters, United States Army Forces, Pacific, APO 500."

III. Hospital Fund Policies

3. In accordance with AR 40-590, paragraph 18, a (1), all statements should show receipts and expenditures in United States Dollars, and also show the moneys as they were received and expended in local currency. Transition to dollar amounts should be shown on all statements. All certificates of audit, change of custodian, etc. should be attached thereto, unless there is adequate room on the statement without crowding.

4. Bonds are negotiable and therefore it is the interpretation of

this office they should be considered as part of the Net Working Capital. However, it is important that bonds be carried at present face value and not maturity value. Unless a hospital is on a Ration Savings Account, all capital surplus to the operation and running expenses of the unit should be forwarded to the Hospital Fund Custodian of the major command concerned. Bonds should be considered as a surplus capital not needed by the holding unit, and as such should be forwarded to appropriate major command for further transmittal to Central Hospital Fund, Surgeon General's Office.

5. Major commands should interpret and formulate policies that do not conflict with existing directives.

6. Extra copies of TM 14-708 and TM 8-262 are not available in this office but have been requisitioned from the United States and will be forwarded immediately upon their receipt.

IV. Publications Relating to Neuropsychiatry

7. It has been brought to the attention of this office that medical officers practicing neuropsychiatry frequently lack many of the publications which are available and which would be of value in their work. The following suggestions are designed to aid in remedying this situation.

8. The following list of TB MEDS, WD Circulars and Technical Manuals are considered necessary as orientation and reference material, and each practicing neuropsychiatrist should have a file of them. Certain items entitled "Reconditioning" are included because this type of activity constitutes an important phase of psychiatric treatment in addition to being a military specialty in its own right. These are publications of the Adjutant General's Department and should be requisitioned from AG Publications Depots in the usual way:

MED 12	22 Feb 44	Lecture Outlines for Officers on Personnel Adjustment Problems.
MED 21	15 Mar 44	Lecture Outlines for Enlisted Men on Personnel Adjustment Problems.
MED 33	21 Apr 44	Induction Station Neuropsychiatric Examination.
MED 48	31 May 44	Management of Neurosyphilis. C 1, 2, 3.
MED 74	27 Jul 44	Electroencephalography: Operative Technique and Interpretation.
MED 76	28 Jul 44	Neurological Diagnostic Techniques. C 1
MED 80	3 Aug 44	Reconditioning Program for Neuropsychiatric Patients. C 1.

MED 84 10 Aug 44 Treatment Program for Psychiatric Patients in Station and General Hospitals. C 1.

MED 94 21 Sep 44 Neuropsychiatry for General Medical Officer.

MED 103 10 Oct 44 Group Psychotherapy.

MED 115 14 Nov 44 Clinical Psychological Service in Army Hospitals. C 1.

MED 137 Jan 45 Physical Reconditioning for Bed and Ward Patients.

MED 154 Jun 45 Psychiatric Social Work. C 1.

MED 155 Apr 45 Aphasic Language Disorders.

MED 156 Jun 45 Consultation Service.

MED 166 Jun 45 Films for Reconditioning for Bed and Ward Patients in ASF Hospitals. C 1.

MED 187 26 Jul 45 Music in Reconditioning in ASF Convalescent and General Hospitals.

MED 193 17 Aug 45 Poliomyelitis.

MED 201 1 Oct 45 Psychiatric Testimony Before Court Martial.

MED 203 19 Oct 45 Nomenclature and Method of Recording Diagnoses.

MED 207 3 Nov 45 Ward Officer and Reconditioning in ASF Hospital.

WD Circular 295 13 Jul 44, Section V, Psychiatric Social Worker.

WD Circular 264 1 Sep 45, Section VIII, Psychologist.

TM 8-290 Dec 44 Educational Reconditioning.

TM 8-291 Dec 44 Occupational Therapy.

TM 8-292 20 Dec 44 Physical Reconditioning.

9. Many books are available through medical supply and should be obtained when there is need for them. It is to be remembered that appropriate books, TB MEDS, WD Circulars and War Department Manuals are valuable library material for nurses, psychologists, corpsmen and selected patients, and that they comprise part of the teaching program which is necessary in stimulating and maintaining the enthusiasm of the auxilliary medical personnel mentioned above. Medical books which are available through the army are listed in the

Medical Supply Catalog, MED 3. Attention is specifically invited to Change 6 of MED 3 which lists the available books giving new item numbers and to Change 8 which includes additional books.

10. In reference to the acquisition of psychological tests for clinical work in medical installations, attention is invited to FM 21-6, 10 January 1946, Section XII, paragraph 68, e, "Test to be used for clinical psychological purposes in medical installations will be ordered on medical supply requisitions addressed to the Surgeon General, Attention: Division of Neuropsychiatric Consultant, Washington 25, D. C."

V. Civilian Hospitalization and Messing

11. Attention of all hospital commanders are invited to the new AFPAC Regulations 50-20, advanced copies of which have been forwarded to the Commanding Officers of all hospitals through the Surgeons of the major commands. This regulation describes civilian personnel authorized hospitalization and treatment, the charges, and method of collection to be used.

12. It has been called to the attention of the Chief Surgeon that hospital bills on Allied Personnel are not being submitted to the representatives of the Allied Powers in satisfactory forms. The commonest faults are listed below:

- a. The subsistence bills are unsigned.
- b. The days of hospitalization for which the charges are made are sometimes stated as inclusive dates and sometimes as exclusive dates.
- c. The statements do not indicate to whom the checks should be made nor to whom it should be mailed.
- d. The amounts are frequently incorrectly figured.

13. Immediate steps should be taken to standardize the forms used in the submission of hospital accounts to see that the above discrepancies are avoided.

VI. Subsistence Accounts for BCOF Personnel

14. Subsistence bills for BCOF personnel in Japan should be submitted on forms provided by them to the Sub Depot Cash Office, British Commonwealth Sub Area, Empire House, Tokyo. If the special forms are obtained prior to billing, it will eliminate a possible cause of delay in collection of accounts. The numbers of these forms are BCOF Form T. S. 4 and Treasury Form No. 16. Copies of these forms are reproduced herein as Exhibit "A". Local reproduction is authorized.

VII. Table of Organization for Red Cross Workers.

15. Paragraph XI, 23, Consolidated Circular, Chief Surgeon's Office, General Headquarters, United States Army Forces, Pacific, dated 1 July 1946, is hereby rescinded.

16. The following is a Table of Organization for Red Cross workers on which their assignments are to be based in this theater:

PERSONNEL	HOSPITAL SIZE			
	1000	750	500	250 & 400
Title	bed	bed	bed	bed
Assistant Field Director	1	1	1	1
Hospital Social Worker	2	1	0	0
Hospital Staff Aide	2	2	2	1
Hospital Recreation Worker	4	3	2	1
Hospital Secretary	2	1	1	1
Total	11	8	6	4

The Table of Organization is planned on the needs of the various individual hospitals and varies according to the number of beds occupied. The Hospital Supervisor assigned to each area understands that the Table of Organization may be altered to meet the requirements of the individual hospitals in their area.

B. SUPPLY

VIII. Initial Distribution of Films.

17. Information received from Office of the Chief Signal Officer, Signal Corps Photographic Center, 35-11 Thirty-Fifth Avenue, Long Island City 1, New York states that initial distribution of the following films in 16 mm size only is now in process and that prints are scheduled for shipment:

Misc. 1270 THE PREPARATION AND INSERTION OF TANTALUM PLATE

Misc. 1272 RADICAL ORCHIDECTOMY

Misc. 1268 INTRAVENOUS ANESTHESIA (color)

Misc. 1268 was produced with a sound consideration of all the fundamental requirements recognized to be essential to the proper administration of Intravenous Anesthetic. It portrays each step used in preparation of the drug, in administering sodium pentothal to the patient and it stresses the necessity for giving the initial dosage very slowly. This film meets every requirement of the American Board of Anesthesiologists.

18. Distribution is being made in accordance with specific recommendations from Education and Training Division, Office of The Surgeon General. Further distribution is not contemplated.

IX. Item 9118100-Prophylactic, Mechanical, Individual, 144

19. Tests made of theater stocks have indicated certain lost unsatisfactory. Issuing agencies with stocks of this item will inspect the same and withdraw from issue any of the lots listed below:

- a. Lot No. 01.M 11700, Manufactured by Killian, Manufacturing Co. and L. E. Shrunk Latex Products, Inc. for Killashun Sales Division, Akron, Ohio.
- b. No Lot Number given but dated January 1944, Manufactured by Killian, Manufacturing Co. & L. E. Shrunk Latex for Killashun Sales Division, Akron, Ohio.

Stocks of the above two lots will be disposed of in accordance with War Department Technical Manual 14-904, "Accounting for Lost, Damaged, and Destroyed Property".

C. PERSONNEL

X. Medical Corps Replacements

20. The Chief Surgeon, General Headquarters, United States Army Forces, Pacific, extends a hearty welcome and best wishes for an enjoyable tour of duty in this theater to the comparatively large number of Medical Department Officers currently arriving.

21. Since most of the recent arrivals are Medical Corps officers, each major command will have a large number of MC officers who have not been given official Military Occupational Specialty classifications by GHQ, AFPAC, as required by letter, GHQ, AFPAC, File AG 210.01 (24 Jun 46) MD, Subject: "Classification of Medical Department Officers," dated 24 Jun 46. Unit commanders and major command surgeons should review their classification records to insure that every MC officer under their jurisdiction has been given an official classification. In instances where official classifications have not been furnished, prompt action should be taken to submit WD AGO Forms 178-2 and 178-3 to General Headquarters, United States Army Forces, Pacific.

22. The above cited letter requires that a copy of WD AGO Form 178-2 and a copy of WD AGO Form 178-3, indorsed by GHQ, AFPAC, be attached to the WD AGO Form 66-1 of each individual Medical Corps officer. It is of primary interest to each MC officer to see that these forms, properly completed, are attached to his Form 66-1, since the official classification is used in determining assignments and eligibility for readjustment. In the case of MC officers on duty with elements of the Army Air Forces, the indorsed WD AGO Form 178-3 only need be attached to WD AGO Form 66-3.

✓

XI. Navy Dental Officers Serve with AFPAC.

23. The first increments of U. S. Navy dental officers have arrived in AFPAC Commands and will accelerate the return to the Z. I. of Army dental officers with long overseas service.

24. On 31 May 1946, The Surgeon General, U. S. A., announced that joint Army-Navy action was being taken to utilize dental officers who were wholly or partially assisted in their education by the Federal government in the ASTP and V-12 program and to establish comparable discharge criteria for both services.

25. Approximately one half of the two hundred Navy dentists scheduled for this theater will have arrived by the time this Circular is published. Additional Army dentists are also on requisition.

26. Authorized ceilings for dental officers have been revised slightly upward, based on current workloads. However, the arrival of Army and Navy dentists will permit a more generous surplus declaration of dental officers.

^

XII. Central Assignment Control for Unit Personnel.

27. Every unit commander has lived through a period of personnel scarcity and always has some job inadequately covered personnel-wise.

28. The most effective way to cover all work equitably is to centralize the control of personnel assignment, usually in the Personnel Office, where data concerning organization, function, workload and work simplification must be maintained. In a small unit, the personnel officer may also make work simplification studies, collect workload data, and prepare organization, function and flow charts, and may be civilian personnel officer and classification officer for all personnel. In larger units these functions may be performed by others, but the findings must always be at the personnel officer's finger tips for repeated reference.

29. The personnel officer can best approach economy of assignment by using the following steps:

- a. Having a visible assignment board paralleling the organization chart, with a stipulated number of places, each bearing an MOS number which is considered necessary for the proper function of each activity shown on the organization chart.
- b. Assignment of personnel (officers, enlisted men and civilians) should be made by the personnel officer to each major activity, so as to best satisfy job requirements by SSN - Visible cards with the name and SSN of the incumbent would then

be placed on the board beside the position with the identifying SSN. Assignment of enlisted personnel should rest with the personnel officer and not with the detachment commander, since the detachment commander is not familiar with the utilization of civilians supplementing the enlisted staff and since the personnel officer ordinarily has the most effective follow-up on the accuracy of MOS classification for each individual.

- c. Daily inspection of the assignment board would reveal overstaffing, understaffing and mal-assignments.
- d. Peak workloads, occurring in various activities of the organization, can be indicated by broken lines on the organization chart, with notations concerning periods of recurring peaks. Consequently, the personnel officer can arrange covering such peak requirements through temporary transfers from other activities having controllable workload valleys.

PART II

TECHNICAL

Healing of Wounds XIII

XIII. Healing of Wounds

Introduction: Wound healing is a process which intimately concerns every surgeon but this subject has received only superficial consideration for the most part until relatively recently when basic principles have become more widely appreciated. Surgeons fail to realize that patients usually are kept in bed longer for healing of the wound of access than for the actual pathological process which initially was present. All medical officers need a more fundamental understanding of the factor involved in modifying wound healing. This paper attempts to epitomize the known facts from various angles, basic, experimental and clinical.

Wound Healing in General: Local Factors. The various local factors involved in wound healing are:

- a. Amount of killed or damaged tissue in the wound space.
- b. Vascularity of tissues involved.
- c. Integrity of the blood flow to the wound.
- d. The amount and character of exudate in the wound space and in the tissue bordering the wound.
- e. The number and nature of organisms in the wound space and bordering tissues.
- f. The number and types of foreign bodies to be encapsulated or extruded.

Systemic Conditions. The following systemic conditions are obviously important in wound healing and some of these will be discussed in detail subsequently:

- a. The age of tissues, whether adolescent, normal adult, senescent or degenerated.
- b. The state of hydration as determined by water, electrolyte and protein balance in the blood.
- c. Normal nutritional balance.

- d. Adequate vitamin balance.
- e. The state of the general circulatory system.
- f. The state of the blood picture.

Biophysics of Wound Healing: As soon as a wound to tissue is sustained, serum and blood accumulate and coagulate. Into this area, cellular elements of blood, wandering tissue cells and new capillary loops are attracted. This, in brief, is the process of wound healing and is dependent upon certain fundamental laws, the basic principles of which are:

- a. Ameboid movement of cells.
- b. Mitotic proliferation of cells.
- c. Maturation of cells engaged in fusion of the wound surfaces.

Ameboid movement of cells is stimulated by the presence of tissue fluids, blood and many other substances. Inadequacy of oxygen and nutritive substances in the ischemic border of the wound may cause tissue hunger followed by cell division with ameboid activity of fibroblasts and endothelial buds. The initial lytic phase where dead tissue is removed by phagocytes is followed by an influx of wandering tissue cells. The first four days after injury is spoken of as the lag phase in which ameboid movement and proliferation of invading fibroblasts occur. Two fundamental processes in this period are:

- a. Stereotropic response of growing cells to surfaces causing fibroblasts to elongate and grow along the fibrils of the fibrin network just as epithelial cells show ameboid movement along the plane surfaces of granulation tissue or beneath crusts.
- b. Centrifugal force drives cells away from their own kind and so into the plasma mass into the wound space. Endothelial buds also exhibit this phenomenon. These basic actions of cells are due to differences in electropotential or like charges on cell membranes or to differences in tissue Ph.

The wound becomes firm as fibroblasts mature and contract. The contractility of a healing scar is beneficial from the standpoint of causing a cavity to close and the wound to become firm but is harmful from the viewpoint of the resultant traction deformities. Healing of wounds can be computed mathematically and Carrel-Du Noy formula will show at what time any given wound may be expected to be healed. This formula depends on the surface area and also applies to cavities such as those seen in empyema.

Relationship of Spreading Factors in Bacterial Invasion to Wound Healing: The ground substance of connective tissue is a complex viscus,

polysaccharide, which offers resistance to passage of foreign materials, including bacteria and their products. Permeability of connective tissue is subject to variations with the race and age of the patient and also the variations within the same organisms, depending upon body location and other factors. The most important factor increasing permeability is a group of substances known as "spreading factors". Hyaluronic acid is the connective tissue intercellular substance and the most important spreading factor is hyaluronidase which is a mucolytic enzyme capable of dissolving this ground substance. There is considerable evidence to show that the virulence of bacteria is directly correlated with their ability to secrete hyaluronidase. This accounts for variations in virulence of various strains of similar organisms. Probably hyaluronidase is the first force called into action by those bacteria able to produce it in their attempt to pass through connective tissue. This is another reason why edema is harmful because edema dilutes the intercellular substance, enlarges the interstices between cells and makes a smaller quantity of hyaluronidase more effective.

Relationship of Tissue Ph to Wound Healing: The traumatic breakdown of tissue liberates split protein products which at first are acid and the Ph of the surrounding area changes towards the acid side. Menkin has shown that polymorphonuclear neutrophilic leucocytes are attracted to the wound first by leucotaxine which will be discussed later, and then if acidity increases due to further breakdown of tissue these granulocytes are killed and the macrophages then come in. If acidity increases further both types of cells are killed and suppuration results. This indicates why sterile suppuration may occur in the absence of tissue infection because suppuration is a phenomenon of response to injury and local acid formation rather than necessarily to bacterial invasion. If the local blood flow carries off these acid products rapidly enough or as healing progresses, a neutral stage is attained and such cells as lymphocytes and plasma cells then come in. It seems that chemotaxis is of great importance in getting cellular elements to the site of inflammatory reaction. The rationale of local application of heat then is to increase blood flow, speed clearing of tissue of acid products and tend to ward off suppuration or speed it up if inevitable.

Role of Leucocytosis-Promoting Factor of Exudates to Wound Healing: Inflammatory exudates have been shown by Menkin to contain a factor liberated by injured cells and per se capable of discharging immature leucocytes into the circulating blood as well as inducing the specific growth of granulocytes and megakaryocytes in the bone marrow. This leucocytosis-promoting factor is associated with the pseudoglobulin fraction of exudates and is specific in that it does not cause fever or the other reactions of inflammation. This substance experimentally isolated from animal exudate will give an 80 to 150% rise in the leucocyte count of humans without any other reaction.

Summary of Chemical Factors Basic in Inflammatory Reaction: The increase in capillary permeability and migration of polymorphonuclear neutrophilic leucocytes is primarily referable to leucotaxine liberated from injured cells. Leucotaxine is a crystalline, nitrogenous substance which is

not histamine. Free glucose likewise is produced by damaged cells and this partially explains why diabetics become more difficult to manage during infection. The leucocytosis of inflammatory reaction is due to the leucocytosis-promoting factor which is a protein in the pseudoglobulin fraction of the exudate. This factor induces discharge of immature granulocytes from bone marrow and also causes a marked hyperplastic reaction of the granulocytes and megakaryocytes in bone marrow. Injured cells also liberate a toxic euglobulin called necrosin which is a substance which causes damage to liver and kidney cells sometimes accompanying severe inflammation. The fever of inflammation is caused by a glycopeptide called pyrexin which acts on the heat regulating center in the hypothalamus. The leucopenia sometimes observed with acute inflammation is due to a polypeptide which is formed in an acid pH. Its action appears to be exerted in trapping of leucocytes in the alveolar walls of the lung and in the sinusoids of the liver and spleen. This partially explains acute splenic tumor accompanying numerous inflammatory processes.

Role of Vitamins in Wound Healing: General. Cellular respiration is carried on by means of a complicated series of chemical reactions which require specific enzymes and prosthetic groups or co-enzymes. These enzymes usually are protein molecules and various vitamins act as co-enzymes in specific reactions.

Vitamin A: Vitamin A has two important functions:

- a. It is needed in visual adaptation in darkness.
- b. It is essential for the integrity of epithelial cells.

The exact role of Vitamin A is unknown but it seems to act as a co-enzyme to protein molecules. Deficiencies in Vitamin A cause epithelial atrophy with reparative proliferation of the basal cell layers. This causes hyperkeratosis which is precancerous. 35 to 50% of average people are A deficient by photometric test and 12% of individuals show clinical deficiency such as varying degrees of night blindness, photophobia, dry skin, dry conjunctiva, blepharitis, follicular hyperkeratosis and numerous or severe infections. An abnormal epithelium more easily allows ingress of bacteria and also interferes with normal healing of wounds.

Vitamin B: Thiamine constitutes the prosthetic group of an enzyme which assists in the oxidation of pyruvic acid in animal cells. This is an aerobic reaction and is a vital step in the intermediate metabolism of carbohydrate. Obviously any deficiency in oxidation of carbohydrate, a substance used by all cells, will lead to the marked physiological derangement involving many cells. It is particularly interesting to note, however, that thiamine is essential to nervous tissue which is totally and uniquely dependent upon the oxidation of carbohydrates for its functional integrity. Thiamine therefore is especially needed in healing of nervous tissue injuries.

Riboflavin: Riboflavin is an essential component of the yellow oxidation enzyme. This enzyme is a phosphoric acid ester of riboflavin in combination with protein which functions in cell respiration and probably is a constituent of all cells.

Nicotinic Acid: Nicotinic acid is part of a co-enzyme which functions in a series of reactions with hexose diphosphate as the substrate.

B-6: B-6 is linked with cellular utilization of unsaturated fatty acids but the exact mechanisms are not known.

Vitamin C: Ascorbic acid is essential in several oxidase enzyme systems and is essential for the integrity of certain cells of mesenchymal origin. Inter-cellular substance in general, and in the capillary bed in particular as well as collagen of all fibrous tissue, requires ascorbic acid for its production and maintenance. The matrices of bone, dentin and cartilage and all non-epithelial cement substances including that of vascular endothelium are affected. Deficiency causes hemorrhage into the wound space with healing lag and a tendency to wound disruptions. Experiments show that ascorbic acid deficiency delays return of tensile strength. About 40% of clinic patients are C deficient and all aged patients, (70 or over) show a relative deficiency. Ulcer diet patients are C deficient after four days of treatment unless the vitamin is especially administered. This deficiency explains many post operative wound dehiscences in visceral carcinoma patients.

Vitamin D: This vitamin is related to the sterols which are of great importance in maintaining the selective permeability of cell membranes by changing from oil in water to water in oil phases of an emulsoid colloid. At least ten substances have vitamin D activity. It is interesting to note that vitamin D has the same basic chemical structure as the sex hormone, adrenal cortical hormone and the cardiac aglycones. Of the sterols, ergosterol is the most important forming D-2 when irradiated with ultra violet light. Vitamin D is vitally concerned in calcium and phosphorus metabolism, probably being essential for their absorption from the gastro-intestinal tract. One derivative in the series of reactions in irradiating ergosterol is dihydrotachysterol which seems to be identical with parathyroid hormone.

Vitamin K: Vitamin K is responsible for maintaining the blood prothrombin level. K is absorbed from the gastro-intestinal tract only in the presence of bile, so in obstructive jaundice is not absorbed, the prothrombin level drops and the patient tends to bleed. K deficiency impedes wound healing only in biliary obstruction cases.

Other factors concerning wound healing will be discussed in a subsequent continuation of this paper.

PART III
STATISTICAL

Evacuation	XIV
Hospitalization	XV

XIV. Evacuation

During the month of July the following patients were evacuated from the several major commands:

	<u>AIR</u>	<u>WATER</u>	<u>TOTAL</u>
EIGHTH ARMY	64	0	64
AFMIDPAC	32	44	76
AFWESPAC	116	170	286
XXIV CORPS	(Unclassified)		72

The following are the evacuations per 1000 strength for the month of July:

JAPAN	0.39
KOREA	1.48
AFMIDPAC	2.38
AFWESPAC	1.64
AFMAC	1.15

As of 31 July 1946 the following number of patients were awaiting evacuation:

EIGHTH ARMY	366
AFMIDPAC	33
AFWESPAC	59
XXIV CORPS	<u>41</u>
TOTAL	499

XV. Hospitalization

The Bed Status Report of 31 July 1946 is as follows:

	<u>TOTAL T/O BEDS PRESENT</u>	<u>TOTAL T/O BEDS ESTABLISHED</u>	<u>TOTAL T/O BEDS OCCUPIED</u>
EIGHTH ARMY	6,500	5,275	2,903
AFMIDPAC	2,300	2,300	888
AFWESPAC	5,500	4,579	3,226
XXIV CORPS	<u>2,350</u>	<u>2,250</u>	<u>978</u>
TOTAL	16,400	14,404	7,995

Number of authorized beds, percent of authorized beds occupied, percent of operating beds occupied and percent of actual military strength in hospitals as patients are listed below:

	<u>BEDS</u> <u>AUTHORIZED</u>	<u>% AUTHORIZED</u> <u>BEDS OCCUPIED</u>	<u>% OPERATING</u> <u>BEDS OCCUPIED</u>	<u>TOTAL PATIENTS IN</u> <u>HOSPITAL % OF ACTUAL</u> <u>MILITARY STRENGTH</u>
JAPAN	5,310	54	55	1.83
KOREA	2,260	43	43	1.88
AFMIDPAC	2,000	44	38	2.46
AFWESPAC	4,690	68	70	2.71
AFAPAC	14,260	56	55	2.19

Actual strength equals 103% of authorized strength.

Tables showing various admission rates are listed below:

ADMISSION RATES PER 1000 PER ANNUM

All Causes

<u>Week Ending</u>	<u>AFAPAC</u>	<u>AFMIDPAC</u>	<u>AFWESPAC</u>	<u>JAPAN</u>	<u>KOREA</u>
7 June 46	633	176	638	731	601
14 June 46	632	176	609	774	575
21 June 46	636	125	574	819	587
28 June 46	632	115	645	792	491
5 July 46	611	206	650	707	535
12 July 46	647	190	649	761	626
19 July 46		200	*	822	640
26 July 46		*	*	785	675

Disease

7 June 46	573	151	580	664	539
14 June 46	568	161	552	699	503
21 June 46	572	111	521	740	515
28 June 46	570	93	593	706	441
5 July 46	544	154	596	629	459
12 July 46	588	153	597	696	556
19 July 46		162	*	743	571
26 July 46		*	*	712	601

ADMISSION RATES PER 1000 PER ANNUM

Injury

<u>Week Ending</u>	<u>AFAPAC</u>	<u>AFMIDPAC</u>	<u>AFWESPAC</u>	<u>JAPAN</u>	<u>KOREA</u>
7 June 46	59	25	58	67	61
14 June 46	63	14	57	74	72
21 June 46	62	14	52	79	73
28 June 46	63	21	52	85	50
5 July 46	67	52	54	77	76
12 July 46	58	36	51	65	69
19 July 46		37	*	79	69
26 July 46		*	*	73	74

Psychiatric

7 June 46	8.9	8	8	11	4.6
14 June 46	9.1	19	9	8	5.9
21 June 46	11.7	18	11	11	8.3
28 June 46	10.0	14	14	6	9.7
5 July 46	8.8	14	13	7	2.8
12 July 46	11.2	13	15	9	10.5
19 July 46	.	9	*	8	2.0
26 July 46		*	*	4	3

Organic Neurological Disease

7 June 46	2.1	0	3.8	2	0
14 June 46	1.8	0	4.2	1	0
21 June 46	.7	0	1.2	.6	0
28 June 46	.9	0	2.5	.3	0
5 July 46	.7	0	1.1	.3	0
12 July 46	.7	0	2.1	0	0
19 July 46		0	*	.6	0
26 July 46		*	*	.6	0

Common Respiratory Disease

7 June 46	77	15	3.8	117	41
14 June 46	77	37	4.2	107	40
21 June 46	65	32	1.2	73	28
28 June 46	64	24	2.5	75	43
5 July 46	57	13	1.1	84	23
12 July 46	62	17	2.1	64	35
19 July 46		30	*	67	49
26 July 46		*	*	63	54

ADMISSION RATES PER 1000 PER ANNUM

Influenza

<u>Week Ending</u>	<u>AFRAC</u>	<u>AFMIDPAC</u>	<u>AFWESPAC</u>	<u>JAPAN</u>	<u>KOREA</u>
7 June 46	3.4	0	8.5	1.3	0
14 June 46	1.5	0	3.4	1.0	0
21 June 46	1.9	0	5.5	.3	0
28 June 46	4.6	0	13.8	.3	0
5 July 46	2.9	0	8.7	.3	0
12 July 46	1.9	0	3.4	2.0	0
19 July 46		0	*	2.0	0
26 July 46		*	*	1.2	0

Primary Atypical Pneumonia

7 June 46	5.6	5	11	3	8.4
14 June 46	7.6	1.4	18	2.6	3.9
21 June 46	10.1	0	25	3.3	3.7
28 June 46	9.0	0	19	3.3	8.7
5 July 46	3.5	0	7	1.6	4.7
12 July 46	6.9	0	13	4.0	3.8
19 July 46		1.4	*	1.3	1.0
26 July 46		*	*	1.2	3

Common Diarrhea

7 June 46	5.6	3.3	15	2	3.7
14 June 46	6.4	0	15	2	3
21 June 46	11.5	1.4	29	2.6	4.6
28 June 46	9.1	0	19	5.2	5.8
5 July 46	6.8	0	17	3.0	0
12 July 46	8.4	1.4	17	4.7	4.8
19 July 46		1.4	*	11.0	1.0
26 July 46		*	*	7.2	5

Bacillary Dysentery

7 June 46	.1	0	.4	0	0
14 June 46	.6	2.8	.8	0	0
21 June 46	.1	0	.4	0	0
28 June 46	.9	1.4	2.6	0	0
5 July 46	1.1	0	3	.3	0
12 July 46	1.4	0	4	0	0
19 July 46		0	*	2.3	0
26 July 46		*	*	.9	0

ADMISSION RATES PER 1000 PER ANNUM

Amebic Dysentery

<u>Week Ending</u>	<u>AFAPAC</u>	<u>AFMIDPAC</u>	<u>AFWESPAC</u>	<u>JAPAN</u>	<u>KOREA</u>
7 June 46	1.8	0	3	1.3	.9
14 June 46	3.2	0	8.5	1	0
21 June 46	5.0	0	13.7	1	.9
28 June 46	2.9	0	7.3	.9	.9
5 July 46	2.9	0	8.3	.6	0
12 July 46	2.8	0	11.7	.6	.9
19 July 46		0	*	.6	1.0
26 July 46		*	*	.9	0

Malaria

7 June 46	33	11.6	39	32	31
14 June 46	34	4.2	47	32	29
21 June 46	34	0	64	22	32
28 June 46	39	12.7	63	28	35
5 July 46	35	1.4	51	30	35
12 July 46	36	2.8	54	30	33
19 July 46		4.3	*	37	53
26 July 46		*	*	35	46

Infectious Hepatitis

7 June 46	3.8	0	6	3	1.8
14 June 46	5.4	0	6.4	6.3	3
21 June 46	6.0	0	9.8	5.3	3.7
28 June 46	9.6	0	21.2	4.2	5.8
5 July 46	5.7	1.4	7.4	5.4	6.5
12 July 46	5.2	0	9.1	2.0	9.6
19 July 46		0	*	4.0	2.0
26 July 46		*	*	5.2	5

Mycotic Dermatoses

7 June 46	9	5	8	13	1.8
14 June 46	8.8	0	3.8	17	.9
21 June 46	10.1	5.6	8.1	16	.9
28 June 46	23.6	8.5	35	26	.9
5 July 46	10.1	0	16	11	0
12 July 46	10.5	1.4	12	12	1.9
19 July 46		13	*	14	0
26 July 46		*	*	14	3

ADMISSION RATES PER 1000 PER ANNUM

Venereal Disease

<u>Week Ending</u>	<u>AFRICA</u>	<u>AFRICA</u>	<u>AFRICA</u>	<u>JAPAN</u>	<u>KOREA</u>
7 June 46	154	5	144	222	65
14 June 46	143	22	130	209	58
21 June 46	129	8	124	178	64
28 June 46	132	14	157	171	47
5 July 46	103	8	115	131	67
12 July 46	152	14	171	202	60
19 July 46		23	*	162	72
26 July 46		*	*	145	64

* Report not yet received